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RESEARCH ARTICLE

Efficacy of Preoperative Administration of Metoclopramide and Dexamethasone in Preventing Vomiting in Children Undergoing Tonsillectomy.

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Abstract

Objective: To carry out a comparative study between metoclopramide and dexamethasone to find out its effect by the way of preoperative administration on the rate of postoperative emesis in children who undergoing tonsillectomy.

Patients and Methods: Ninety patients between the age of 3-14 years who planned for tonsillectomy were enrolled in our study.

Patients were randomly divided into three main groups:

Group I: In which children received Dexamethasone injection with a dose of 0.15 mg/kg IV (n = 30).

Group II: In which children received Metoclopramide injection with a dose of 0.15 mg/kg IV (n = 30).

Group III: In which children received 4 ml saline (n = 30).

All episodes of Postoperative vomiting were recorded

Results: There were no significant differences between these three main groups of patients regarding the age, sex, weight, type of surgery, duration of surgery and duration of anesthesia.

The incidence of vomiting throughout the initial four hours (0-4 hours) was not wasn't considerably different between the three groups, three patients (10%) in the dexamethasone group compared with 3 patients (10%) in the metoclopramide group and 4 patients (13%) in the saline group ($P < 0.05$).

The incidence of vomiting during (4-24 hours) was more frequent in the saline group, 8 patients (27%) developed vomiting ($P < 0.001$). Only three (10%) patients in the metoclopramide group vomited during this period compared with 6 patients (20%) in the dexamethasone group

Conclusion: Metoclopramide found to be more effective than dexamethasone in preventing vomiting in children undergoing tonsillectomy.

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Introduction:-

Tonsillectomy is considered one of the foremost performed surgical procedures in pediatric age group with a reported rate of postoperative vomiting ranging between 40%-73% (1-3). The rate of postoperative emesis is found to be higher in pediatric patients than in adults who undergo tonsillectomy (4).

Patients often perceive Postoperative nausea and vomiting as one of the foremost bothering side effects of anesthesia and many believe about it as distressing as the pain related to the operation (5). Postoperative nausea and vomiting can contribute to the event of medical complications (6,7), and patients with Postoperative nausea and vomiting consume a lot of resources and need extra health care skilled time compared with patients in whom these complications square measure avoided.

Metoclopramide is often used as prophylactic medicine in these patients to prevent vomiting. However, its use is restricted by low efficiency and the chance and risk of unwanted adverse effects, such as extrapyramidal symptoms (8).

Dexamethasone is considered to be a steroid of low price, with low rate of adverse effects, prolonged anti vomiting effect in cancer patients, and highly effective in reducing the rate of postoperative vomiting in kids who undergo tonsillectomy (8). However, their actual mechanism in preventing nausea or vomiting continues to be unknown.

The aim of our study is to carry out a comparative study between metoclopramide and dexamethasone to find out its effect by the way of preoperative administration on the rate of postoperative emesis in children who undergoing tonsillectomy.

Material and Methods:-

Ninety patients of both genders, aged 3-14 years who planned for tonsillectomy were enrolled in the study.

The exclusion criteria were, all Children who received steroids, antiemetic and antihistamine drugs twenty four hours prior to surgery.

Patients were randomly divided into three main groups:

Group I: In which children received Dexamethasone injection with a dose of 0.15 mg/kg IV (n = 30).

Group II: In which children received Metoclopramide injection with a dose of 0.15 mg/kg IV (n = 30).

Group III: In which children received 4 ml saline (n = 30).

The drugs were administered i.v immediately before induction of anesthesia.

Patients were instructed to fast from midnight and without giving them any premedication. All the operations were performed by one surgeon using the cold dissection method. The bleeding was controlled by cauterization using bipolar diathermy.

All patients were transferred after surgery to the recovery room first before they transferred to the ward. After being transferred to the floor, a soft food was given to all patients throughout their hospital stay. In addition to that, all patients had given a maintenance intra venous fluid until adequate oral intake was achieved.

All attacks of Postoperative vomiting were reported by nurses who do not know about the study group during the first 4 hours and 4–24 hours after the end of general anesthesia. We defined Vomiting as expulsion of the contents of stomach through the mouth; and complete response was defined as absence of Postoperative vomiting without a need for antiemetic.

Antiemetic was given when there are 2 or more attacks of Postoperative vomiting in the first 24 hours after general anesthesia.

Results:-

90 patients (30 per group) were included in the study. There were no significant differences between these three main groups of patients regarding the age, sex, weight, type of surgery, duration of surgery and duration of anesthesia. (Table 1).

Table 1: Demographic characteristics of patients in their respective group.

Characteristics	Group I (n = 30)	Group II (n = 30)	Group III (n = 30)
Age (yr)	4.9 ± 3.1	4.8 ± 3.2	4.6 ± 3.2
Weight (kg)	19.7 ± 5.7	20.6 ± 5.5	20.1 ± 5.3
Sex (male/female)	19/11	20/10	18/12
Type of surgery - Tonsillectomy - Adenotonsillectomy	8 22	6 24	6 24
Duration of surgery (min)	17.8 ± 3.7	16.6 ± 4.2	18.1 ± 3.5
Duration of anesthesia (min)	35.1 ± 6.3	36.2 ± 5.3	36.2 ± 6.1

No significant difference were found between these three groups in regard to the incidence of post operative vomiting in first 4 hours (0-4 hours), three patients (10%) in the dexamethasone group compared with 3 patients (10%) in the metoclopramide group and 4 patients (13%) in the saline group ($P < 0.05$).

The incidence of vomiting during (4-24 hours) was more frequent in the saline group, 8 patients (27%) developed vomiting ($P < 0.001$). Only three (10%) patients in the metoclopramide group vomited during this period compared with 6 patients (20%) in the dexamethasone group.

Thus Emesis-free within the first 24 hours was achieved significantly more often in patients who had received metoclopramide than in those who had received dexamethasone or placebo (saline).

Discussion:-

Complications of tonsillectomy in children are not uncommon and include pain which may result in poor oral intake, dehydration, vomiting, infection, fever and bleeding. Tonsillectomy using bipolar method has been used because of the advantage that it decreases the time of operation and it thus reduce the risk of immediate postoperative bleeding (9). However, bipolar dissection method may result in more postoperative pain (9). The mechanism of action of dexamethasone as an antiemetic is by antagonizing the prostaglandin, inhibit release of tryptophan and endorphins (10-13). These therapeutic effects of dexamethasone led to common use of it in children undergoing tonsillectomy.

Many medications have been used in order to prevent post operative vomiting (14). The ideal drug to be used should have a good efficacy, little adverse effects and cheap (14,15) .

The action of metoclopramide is mainly facilitating the release of acetylcholine. This action may be mediated by many different mechanisms. The antiemetic and nausea inhibitory effects of metoclopramide are related to its central dopaminergic effects (8).

Metoclopramide in high doses was found to be very effective in decreasing chemotherapy-induced vomiting. In very low doses it frequently used to treat nausea and vomiting (8). The aim of using these low doses is to decrease central pyramidal and sedative effects which are found to be more common in children than adults. The efficacy of lower doses of metoclopramide in preventing post operative nausea and vomiting is very variable (8). Because of the short half-life of metoclopramide, it is unlikely to produce any antiemetic effect in the recovery period if administered during induction of anesthesia (8,16). Different reports have studied the benefit of administration of 10 mg metoclopramide in adult patients (17).

Several studies regarding the effect of a single preoperative I.V dose of steroid on the morbidity of tonsillectomy has been reported different results (18,19). Many reports have found that preoperative administration of a single dose of I.V steroid have reduced the postoperative pain, emesis with an earlier return to normal oral intake feeding (20-22). On other hand another different studies have found no significant differences (23).

However, in our study only three (10%) patients in the metoclopramide group vomited during 4-24 hour period compared with 6 patients (20%) in the dexamethasone group and 8 patients (27%) in the saline group. On the other hand, there was no significant difference between the three groups in regard to the incidence of vomiting during the first four hours.

Conclusion:-

Metoclopramide found to be more effective than dexamethasone in preventing vomiting in children undergoing tonsillectomy.

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